Alexander Rossi Miller

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Positions Held

2022–2023 Visiting Researcher, Technische Universität Kaiserslautern, Germany

2017–2020 Member, Universität Wien, Vienna, Austria

2017   Visiting Scientist, Institut Henri Poincaré, Paris, France

2014–2017 J. L. Doob Research Assistant Professor, University of Illinois

Education

2013   Ph.D. in Mathematics, University of Minnesota

Publications

20. Covering numbers for characters of symmetric groups
    Alexander R. Miller
    Ann. Sc. Norm. Sup. Pisa Cl. Sci., to appear

19. The characters of symmetric groups that depend only on length
    Alexander R. Miller
    Math. Z. **304** (2023), no. 9, 1–14.

18. Zeros and roots of unity in character tables
    Alexander R. Miller
    Enseign. Math., in press

17. On Foulkes characters
    Alexander R. Miller
    Math. Ann. **381** (2021) 1589–1614

16. The sparsity of character tables of high rank groups of Lie type
    Michael J. Larsen and Alexander R. Miller
    Represent. Theory **25** (2021) 173–192

15. Congruences in character tables of symmetric groups
    Alexander R. Miller
    Preprint

14. Many zeros of many characters of GL(n,q)
    Patrick X. Gallagher, Michael J. Larsen, and Alexander R. Miller
    Int. Math. Res. Not. IMRN **2022** 4376–4386

13. Dense proportions of zeros in character values
    Alexander R. Miller
    C. R. Math. Acad. Sci. Paris **357** (2019) 771–772

12. Character restrictions and reflection groups
    Eugenio Giannelli and Alexander R. Miller
    J. Algebra **531** (2019) 336–348

11. On parity and characters of symmetric groups
    Alexander R. Miller
    J. Combin. Theory, Ser. A **162** (2019) 231–240

10. Walls in Milnor fiber complexes
    Alexander R. Miller
    Doc. Math. **23** (2018) 1247–1261

9. Orthogonal polynomials and Smith normal form
   Alexander R. Miller and Dennis Stanton
   Monatsh. Math. **187** (2018) 125–145

8. Some characters that depend only on length
   Alexander R. Miller
   Math. Res. Lett. **24** (2017) 879–891

7. Eigenspace arrangements of reflection groups
   Alexander R. Miller
   Trans. Amer. Math. Soc. **367** (2015) 8543–8578

6. Foulkes characters for complex reflection groups
   Alexander R. Miller
   Proc. Amer. Math. Soc. **143** (2015) 3281–3293

5. The probability that a character value is zero for the symmetric group
   Alexander R. Miller
   Math. Z. **277** (2014) 1011–1015

4. Reflection arrangements and ribbon representations
   Alexander R. Miller
   Ph.D. Thesis, 2013
   European J. Combin. **39** (2014) 24–56

3. Differential posets have strict rank growth: a conjecture of Stanley
   (Positively answers 25-year-old question of R. P. Stanley from 1988 in JAMS)
   Alexander R. Miller
   Order **30** (2013) 657–662

2. Note on 1-crossing partitions
   M. Bergerson, A. Miller, A. Pliml, V. Reiner, P. Shearer, D. Stanton, N. Switala
   Ars Combinatoria **99** (2011) 83–87

1. Differential posets and Smith normal forms
   Alexander R. Miller and Victor Reiner
   Order **26** (2009) 197–228

Conference Proceedings

2. Vanishing results for character tables
   Alexander R. Miller
   in "Character Theory and Categorification",
   Oberwolfach Reports **19** (2022), to appear

1. Milnor fiber complexes and some representations
   Alexander R. Miller
   in "Topology of Arrangements and Representation Stability", pp. 43–123,
   Oberwolfach Reports **15** (2018)

Selected Lectures

2022 Aug Darstellungstheorietage, Technische Universität Kaiserslautern, Germany

2022 Aug Character Theory and Categorification, MFO, Oberwolfach, Germany

2021 Mar Combinatorics Seminar, University of Southern California, Los Angeles

2020 Feb Bern–Neuchâtel–Fribourg Intercity Seminar, Universität Bern, Switzerland

2019 Sep Austrian Mathematical Society Conference, Dornbirn, Austria

2019 Jan Combinatoire Énumérative et Analytic, Université Paris Diderot, Paris, France

2018 Nov Einstein Workshop on Algebraic Combinatorics, Freie Universität Berlin, Germany

2018 May Algebra & Representation Theory Seminar, University of Cambridge, UK

2018 Mar Séminaire Lotharingien de Combinatoire, Institut Camille Jordan, Lyon, France

2018 Mar Arbeitsgemeinschaft für Diskrete Mathematik, Technische Universität Wien, Austria

2018 Jan Topology of Arrangements and Representation Stability, MFO, Oberwolfach, Germany

2017 Dec Algebraic and Enumerative Combinatorics, SFB Statusseminar, Strobl, Austria

2017 Nov Algebra und Algebraischen Kombinatorik, Leibniz Universität Hannover, Germany

2017 Sep Séminaire Lotharingien de Combinatoire, Bertinoro, Italy

2017 May Midwest Combinatorics Conference, University of Minnesota, Twin Cities, USA

2015 Oct Enumerative Algebraic & Geometric Combinatorics, AMS Session, Chicago, USA

2013 Mar Algebraic Combinatorics, AMS Special Session, Oxford, USA

2012 Oct Combinatorics Seminar, University of Minnesota, Twin Cities, USA

2012 May Combinatorics Seminar, University of Minnesota, Twin Cities, USA

2010 Apr Combinatorial Representation Theory, AMS Special Session, St. Paul, USA

2009 Jan Algebraic Combinatorics Seminar, Fields Institute, Toronto, Canada

2008 Mar Combinatorics Seminar, University of Minnesota, Twin Cities, USA

Journals and Conferences Refereed

    Advances in Applied Mathematics
    Algebraic Combinatorics
    Canadian Mathematical Bulletin
    Discrete and Computational Geometry
    Discrete Mathematics
    Electronic Journal of Combinatorics
    Formal Power Series and Algebraic Combinatorics
    Journal of Algebraic Combinatorics
    Journal of Combinatorial Theory Series A
    Journal für die reine und angewandte Mathematik (Crelle's Journal)
    Order, a journal on the theory of ordered sets and its applications
    Proceedings of the American Mathematical Society
    SIAM Journal on Discrete Mathematics

Teaching Experience

Courses taught at the University of Illinois

2016 Fall Calculus III Honors (Math 241)

2016 Fall Nonlinear Programming (Math 484)

2016 Spg Conjugate Duality and Optimization (Math 589)

2016 Spg Nonlinear Programming (Math 484)

2015 Fall Nonlinear Programming (Math 484)

2015 Spg Nonlinear Programming (Math 484)

2014 Fall Fundamental Mathematics (Math 347)

Courses taught at the University of Minnesota

2014 Spg Introduction to Modern Algebra (Math 4281)

2013 Fall Calculus II (Math 1272)

2013 Sum Applied Linear Algebra (Math 4242)

2011 Fall Calculus II (Math 1272)

2011 Sum Applied Linear Algebra (Math 4242)

2009 Sum Calculus I (Math 1271)

Recitations led at the University of Minnesota

2014 Spg CSE Linear Algebra and Differential Equations (Math 2373)

2012 Fall Linear Algebra and Differential Equations (Math 2243)

2010	Spg	Calculus I (Math 1271)
2010	Spg	Honors Calculus II (Math 1572H)
2009	Fall	Honors Calculus I (Math 1571H)
2009	Spg	Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
2008	Fall	Sequences, Series, and Foundations: Writing Intensive (Math 3283W)
2008	Spg	Honors Calculus IV (Math 2574H)
2007	Fall	Honors Calculus III (Math 2573H)

Teaching Awards

| 2008 | Apr | *John Bowers Excellence in Teaching Assistance Award*, University of Minnesota. "…honors an outstanding teaching assistant who has demonstrated exceptional interest and commitment to the teaching of IT [Institute of Technology] students." |
| 2008 | Feb | *Institute of Technology TA Award*, University of Minnesota. "...one of three TA's that was voted best TA in the Institute of Technology. The voting was done completely by students in the Institute of Technology." |